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SURVEY OF SOVIET HEAVY INDUSTRY (9)

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MACHINE TOOLS

Fuel Pump Line

Machine and Assembly Shop No 2 of the Moscow Carburetor plant recently completed the installation of a semiautomatic line of unit-type machine tools, which will be used for processing parts for the B-9B fuel pump (benzonasos)!. (Moscow, Komsomol'skaya Pravda, 30 July 1960)

New Press

The repair-mechanical shop of the Motor Vehicle Plant imeni Likhachev., besides its basic tasks -- the repair of machine tools -- is building forge-press and casting equipment of great capacity for the needs of the enterprise. In this photograph cutters Vladimir Teplyakov and Vasiliy Tsarev are taking measurements for drilling lubrication vents for the gears of a 725-ton press which was completely built in this shop. Teplyakov, a leader in production, has become an extremely highly-skilled cutter. He fulfills the production norm by 150-160% and shares his experience and knowledge with young workers. One of his apprentices is Vasiliy Tsarev, who is successfully coping with the tasks given to him. (Vechernyaya Moskva, 11 August 1960. Full translation)

Standard Machine Tool Components

During past years the collectives of the enterprises of the Moscow City Economic Council have had noticeable success in building special aggregate machine tools, automatic and assembly belt lines from universal, standard components and elements. It goes without saying that this method is much more satisfactory than the production of equipment according to individual plants.

In this respect the collectives of the design bureau SKB-1 and the Machine tool Construction Plant imeni Ordzhonokidze, where standard components have been used for 15 years, have amassed particularly rich experience.

At the present time SKB-1 has developed and several other enterprises have successfully introduced a large assortment of standard components for aggregate machine tools. The basis of their creation is the principle of maximum unification of all machine tool or automatic line elements, including power heads, bed plates, bases, transport mechanisms, mechanisms for holding the blank being machined. Electric, hydraulic and pneumatic instruments and apparatus are also being standardized. In SKB-1 more

Standard Machine Tool Components (cont'd)

than 500 different types of these components and elements have been created. These elements are used, for example, to build special aggregate machine tools designed for drilling, counterboring, threading, cutting, and milling. The period for design is reduced by 3-4 times, and the time for production -- 1½-2 times in comparison with the production of special machine tools of original construction. Thanks to the potentials of mass production of components, labor expenditures are decreasing by 3-4 times.

The latter is extremely important. At the Plant imeni Ordzhonokidze, for example, without a substantial increase in production capacity, the production of aggregate machine tools and automatic lines was increased about to three times that of 1957 and the cost was decreased considerably.

In this respect the experience of the collective of the Scientific-research Institute of Technology and Production Organization is valuable. From standardized elements developed in this institute, many enterprises of the Tatar and Kuybyshev economic councils are assembling machine tools and automatic lines, and can install them in different combinations with great ease in order to change the type of

Standard Machine Tool Components (cont'd)

production. The labor consumption for machining parts on these machine tools was decreased by 3.3 times. The same experience has been achieved at several enterprises of the Moscow City Economic Council.

Aggregate machine tools can receive broad application under conditions of non-mass production items. In this case the machine tools are planned not for one, but for a group of similar parts. By readjusting the machine tools it is possible to machine blanks in groups. Such machine tools, produced by the Plant imeni Ordzhonokidze, using the blueprints of SKB-1, are being successfully used at the Krasnyy proletariy Plant imeni Yefremov and other enterprises.

There is a lack of unified type construction of standardized components and elements for automatic lines. At present these elements are being constructed by various design organizations and institutes, including the Moscow SKB-1, the Minsk SKB-8, the Small Aggregate Machine Tool Plant in Khar'kov, and others. The design and basic capacity of the components vary considerably, a fact which of

Standard Machine Tool Components (cont'd)

course does not lead to broad application of these components. It would be correct to concentrate the standardization of a given component or element in a definite organization. The design of component parts for aggregate machine tools and automatic lines for machining body parts can be assigned to SKB-1, for automatic lines of rotating parts -- to SKB-6, for small machine tools -- to the Khar'kov Small Aggregate Machine Tool Plant.

Together with this the Experimental-scientific Research Institute of Metal-cutting Machine Tools should speed up the development of type unification, nomenclature and basic parameters of standardized component parts for machine tool construction.

It is no less important to organize the centralized production of standardized component parts and elements which could be acquired by machine construction enterprises which independently build lines. This problem, unfortunately, is being solved extremely slowly.

The Moscow City Economic Council recently specialized two plants, in order that by 1965 they would be able to

Standard Machine Tool Components (cont'd)

produce 6000 sets of standardized component parts and elements. The production of hydro- and electrical equipment has also been organized. This will satisfy the demands of the machine builders only to a certain degree. Basically the question does not revolve around this. The State Planning Commission of the RFSFR still continues to load these enterprises with production tasks which do not correspond with their new profile.

The State Planning Commission and the State Committee on Automation and Machine Construction of the USSR Council of Ministers should pay closer attention to these problems. The broad application of standardized component parts will make it possible to sharply increase the production of automatic lines and even to exceed the planned figures for the Seven-year Plan. (Ekonomicheskaya Gazeta, 7 August 1960. Partial translation)

New Motor Block Machining Tool

Motor blocks for trucks at the Moscow Motor Vehicle Plant imeni Likhachev are machined on milling, drilling, cutting, and other machine tools. During the process of machining these parts are transferred from tool to tool. Much labor on the part of auxiliary workers is expended in this. The collective of the Design Bureau of the Moscow City Economic Council, SKB-1, has created a large-scale automatic line, the 1L96, which will be for the special production of this type of part.

This unique equipment consists of four sectors, where the parts will be machined in strict technological sequence. The equipment includes 85 large bilateral aggregate machine tools, a large number of auxiliary mechanisms, hydraulic and electric generating stations, and transporting devices.

The entire process of machining the motor blocks will be done without one worker touching them. The aggregate is designed for the simultaneous production, without adjustment, of two types of motor blocks, for a gasoline and diesel engine. 60 blocks will be produced per hour.

New Motor Block Machining Tool (cont'd)

The Moscow Plant imeni Ordzhonokidze will produce the new automatic machine tool line in 1961. (Ekonomicheskaya Gazeta, 25 August 1960. Full translation)

Automatic Revolving Table

Recently in the cold metal-working technology department of the Central Scientific-research Institute of Technology and Machine Construction tests were concluded on an experimental automatic revolving table with programmed control for drilling.

The entire machining cycle, with the exception of the insertion and removal of parts, takes place automatically. Aperture drilling is effected with the aid of a programming mechanism built into the body of the revolving table. The weight is 70 kilograms, and the cost of producing one of these mechanisms is about 1500 rubles. About 2 million rubles per year will be saved through its application.

The design was under the direction of Professor A. I. Isayev and Engineer L. Y. Kadigrobov, and the young engineer-specialist of the automation of technological processes, N. G. Titova. Colleagues from the Automation and Telemechanics Institute of the USSR Academy of Sciences also participated. The new automatic table will soon undergo factory tests. (Vechernyaya Moskva, 29 August 1960. Full translation)

New Programmed Control Machine Tool

These days at one of Siberia's largest machinery construction enterprises, the Novosibirsk Tyazhstankogidropress imeni Yefremov, a notable event is taking place. Here our country's first heavy machine tool with program control is being born. This is the NR-IP Novosibirsk cutting tool, the first programmed one. It is called the harbinger of the "machine tools of the future"...This title reflects actuality very closely.

Programmed machine tools are today of course no longer a novelty in domestic and foreign industry. This is a truism only in respect to small and medium-size machines. It is an entirely different matter with heavy machine tools. There were arguments among the engineers. The basis of these arguments was the following. On a light machine tool with program control hundreds of parts are produced per shift. Let us assume that one of these hundred was defective. This is not so bad. It is an entirely different situation on a heavy machine tool such as is being produced by the Yefremov men. One part sometimes costs tens or hundreds of thousands of rubles. To ruin such a part would be a great loss. The program mechanism must not err.

About two years ago when the plant collective under-

New Programmed Control Machine Tool (cont'd)

took the new project, there were no specialists in this field here. There was, however, no lack of young and talented engineers and technicians, fighters for technological progress, bold schemes: Yakov Brovman and Vladimir Rusayev, Petr Slezinger, and Nikolay Zemerov, Genrikh Makarov, Lev Samsonov, and others. A new design subdivision was formed with these men: the Program Mechanism Bureau. The men in this bureau conscientiously learned all program control systems available at that time, and not one of these was suitable for a heavy machine tool. The designers went their own way. They stubbornly looked for a system which would be 100 percent safe in respect to reliability and accuracy.

The many months of searching were not in vain. Today it is already possible to see the first example of the heavy machine tool program system. It consists of "program preparation mechanism" and "execution mechanism" (or, as the designers say -- "program finishing mechanism").

"The preparation mechanism" is situated outside of the shop, far from the machine tool, in the plant's technological department. It looks a little like a small elec-

New Programmed Control Machine Tool (cont'd)

tronic brain. With the aid of a panel with 10 keys, the plans, translated into a numerical code, are transmitted into the "memory block". After this the program is recorded on five-track magnetic tape. Then a bobbin with the ribbon is sent to the shop and installed in the "execution mechanism" which is installed next to the machine tool. This is a unique tape recorder. The power is switched on, the tape starts up, and the mechanisms begin to operate on impulses from the tape: the spindle rotates, the mandrel rises and falls, the radial support moves out, the seven-meter column shifts, the emulsion supply is turned on and off, etc.

Today's technology is a technological process of high accuracy, parts of complex configurations are the normal thing. On existing equipment the machine tool operator sees neither the tool nor the surface being machined. Tomorrow's technology will be even more complex. Machine tools with program control, particularly heavy tools, are things of the future.

This is confirmed by the tremendous interest shown on the part of the country's large plants in the creation of this new machine tool. Letters come from Uralmash, from the plants of the Ukraine, Belorussia, Leningrad and other areas. Concrete advice is given, and best wishes are ex-

New Programmed Control Machine Tool (cont'd)

tended.

Right now the NR-1P machine tool has already been assembled. The program mechanism is also ready. The individual component parts and systems are being tested and adjusted. The machine tool will be completed as a gift for the 43rd Anniversary of the October Revolution. By the third year of the Seven-year Plan the plant will begin mass production on these remarkable machines. (Sovetskaya Belorussiya, 27 August 1960. Partial translation)

Automatic Machine Tools

In recent years our machine tool construction industry has set a firm course toward the replacement of all basic machinery. Modern design is based on contemporary achievements in the field of electronics, mathematics, physics, cybernetics and many other combined sciences. Each year industry receives more automatic lines and machine tools with high technological-economical qualifications.

The process of replacing poorly-productive, obsolete equipment will be conducted on an extremely broad front. During the Seven-year Plan machine builders must assemble 1300 automatic lines in plants and factories, and 50 enterprises will become model plants in complex automation and mechanization.

Before us lies the brochure by E. Knyazhitskiy and B. Ust'-Shomuskiy, Stanki budushchego (Machine Tools of the Future), published by the Odessa Publishing House. The brochure is a report on the creative successes of designers, technologists and workers at one of the country's leading machine tool construction enterprises, the Odessa Milling Tool Plant imeni S. M. Kirov. The reader visits the plant shops and laboratories, becomes a witness to new technological decisions and work for the creation of new model mach-

Automatic Machine Tools (cont'd)

ine tools which have won high awards at various exhibits.

Besides copy-milling, the plant produces coordinate-cutting, honing tools and other types of metal-working equipment. Some of them are superior to the best foreign types.

The authors acquaint us with the history of the development and perfecting of the inductive feeder for coordinate-cutting tools, the supply of which the Swiss firms, SIP and Houser monopolized for a long time.

Production of this type of tool was begun in the Soviet Union after the war. The first original model, the 2430, was an experimental base for the Kirov men, from which sprung the entire family of machines which turned out to be better than the Swiss ones. At the All-union Industrial Exhibit the 2A430 was awarded a third-degree diploma, and its cousin, the 2A430P, returned home from the World Fair in Brussels in 1958 with a gold medal.

The brochure goes into detail in the innovations which were incorporated by the Kirov men into the coordin-

Automatic Machine Tools (cont'd)

ate-cutting tool. These are primarily the electro-inductive method of reading coordinates, a special feeder, which replaced screw readers, optical measurement and various correcting mechanisms. For all their complexity they were not perfect and limited the use potential of the tool and did not guarantee exact measurement.

"The inductive method of instrument reading," it says in the brochure, "can find application in various machine tools and mechanisms where accurate measurement of length is demanded and accurate adjustment of mechanisms for the required size (polishing mandrels, cutting tool tables), and also for accurate measurement of angle adjustments (dividing tables, heads etc.)."

The authors give convincing proof of the potentials of automation in the operation of universal machine tools which are usually used in mass production.

The Kirov men start from the presence of a substantial difference in the degree of automation of mass, small number, and individual production. They determined that in order to "radically raise the level of automation of enterprises with individual and mass production it is

Automatic Machine Tools (cont'd)

necessary to create flexible automatic tools which can be quickly and easily adjusted for machining various types of blanks as well as securing a high productivity which is characteristic of inflexible automatic machine tools."

A solution was found in the creation of machine with programmed control, in which there is a successful combination of universal application and automatic functioning of the working parts. We will not give even a brief description of these program mechanisms. The reader will find in the brochure plans for these mechanisms, diagrams and explanations of all elements in these automatic processes. We shall say only that the plant specialists have succeeded in a short period in proposing programming systems with a large number of functions for four machine tools. The construction of a fifth, perfected, model is being completed.

The experience gained at the plant shows that the most important element in the work designed to simplify complex program mechanisms. In the latest model programmed machine tools "comparison" systems are used, which are

Automatic Machine Tools (cont'd)

usually called "analogous". They lack the fast operating counting elements, for which frequent violations of the established regime are characteristic. On the coordinate-cutting tool, model OF-46, six functions will be programmed and, practically speaking, it will become an automatic tool.

The work done by the Kirov men in increasing the productivity and accuracy of honing machines is worthy of attention. On the basis of analysis of domestic and foreign experience, the Odessa machine tool builders came to the conclusion that the honing process must have an active control system. Only automatic control will allow the product to reach the required dimensions and create the conditions for using honing tools and automatic lines.

The Kirov men have not trod well-traveled paths but have searched for new solutions. The traditional lever contact measurement devices and heavy gauges have been replaced by ordinary kerosene as a reliable inspector of accuracy and cleanliness of the apertures being machined.

The kerosene feeder supports constant contact between the honing bars and the surface being machined for the

Automatic Machine Tools (cont'd)

rough machining, and makes the "observation" process automatic. The tool demonstrated by the brochure was tested in honing apertures from 8.5 to 60 millimeters and was completely reliable.

The brochure by E. Knyazhitskiy and G. Ust'-Shomuskiy is valuable not only through its practical significance for machine tool designers. Feeders of a different type, program control mechanisms can be transferred, adapted, re-worked for many types of existing equipment as well as equipment now being created. It is also valuable for the fact that it shows the power of the creative cooperation of persons of various professions, their ability to push ahead against obstacles, and continually perfect that which has already been done, to clearly see the routes toward and the goal of technological progress.

The authors call their little book Machine Tools of the Future. This book shows the tremendous work done by the plant collective, but this equipment has already come out of the realm of idea, for the incorporation of which it is merely necessary to reach out. It exists today and today serves man. (Ekonomicheskaya Gazeta, 23 November 1960. Full translation).

SELF-PROPELLED MACHINERY

New Power Shovel

On the eve of the inauguration of the Sixth Session of the Supreme Soviet of the USSR the Kovrovskiy Excavator Plant began production on the first group of E-758 power shovels. In comparison with the previous model, the E-652, this machine has many advantages -- a scoop with greater capacity, a greater productivity. The new machine is more economical, easier to operate and has a longer operational life. (Izvestiya, 22 December 1960. Partial translation).

Giant Power Shovel

The designers of the Uralmash Plant have completed the technical design of a new self-propelled power shovel with a 50 cubic meter scoop and a boom 125 meters long. This giant power shovel can lift 100 tons of earth to the height of a 17 story building and transport it a quarter of a kilometer from the digging site. Digging operations will be conducted with great speed -- a period of 70 seconds. (Komsomol'skaya Pravda, 29 September 1960. Full translation).

METALLURGICAL INDUSTRY

Electrode Welding of Cast-Iron

The general opinion is that there is only one method of dealing with defects in iron casting -- a raising in the quality of casting. This method is, of course, a basic one, but it is not the only one. Welding comes to the aid of the producers, as in many other cases.

Until recently cast-iron welding was accompanied by great difficulties, since the item being welded had to be heated to 500-700 degrees, and for the cold method special expensive electrodes were necessary. The electroslog welding method, the technology of which was developed in the Institute imeni E. O. Paton, is much more effective.

The men from the Experimental Scientific-Research Institute of forge-Press Machine Construction, A. Roglalev, Shevtsov and others have continued these experiments. They were successful in finding practical application for manual, semi-automatic and automatic electroslog welding. With the

Electrode Welding of Cast-Iron (cont'd)

manual method the process is conducted for the first 10-15 minutes with carbon electrodes. Then cast-iron pivots are used with a higher silicate content. The sector to be welded is heated, which excludes the necessity for heating the metal itself. Another source of heat in automatic welding are large cross-section electrodes in the form of rods and "floating mouth pieces", also with an increased silicate content.

For welding with a large cross-section electrode, the institute designed a special welding device. Its design is much simpler than apparatus used for processing steel. Electroslog welding insures a chemical unity to the juncture. There are no cracks or other defects.

The experience of the Voronezh Heavy Mechanical Press Plant has confirmed the effectiveness of the new welding method for large size objects.

Up to 30% of defective casting can be saved by electroslog welding. This will save about 100,000-150,000 rubles a year in average capacity iron-casting shops. (Ekonomicheskaya Gazeta, 14 August 1960. Full translation).

New Electric Drag

60-2M competition motorcycles. from the Izhevsk Machine Construction Plant gave the best results at the 35th International motorcycle olympics in Austria and won a gold medal for the enterprise.

At the Irkutsk Heavy Machine Construction Plant a unique electric drag is being constructed for the extraction of gold.

The new drag is the country's most powerful. The capacity of its scoops is 600 liters. This powerful aggregate is as tall as a ten story building and is 230 meters long. The productivity of the drag, which is a true floating gold plant, is 2,000,000 cubic meters of ore per year. This will replace the labor of 12,000 gold prospectors. (Ekonomicheskaya Gazeta, 29 September 1960. Partial translation).

MOTOR VEHICLES

Motor Vehicle Parts

The products list of the Moscow Motor Vehicle Plant imeni Likhachev currently numbers 28,000 type-designations of parts, units, etc. This could be cut in half and truck production substantially increased by transferring to other plants the manufacture of such items as bicycles, buses, rear axles, pistons, wrist pins, connecting rods, and cylinder sleeves. The products list of bearings at the Moscow First State Bearing Plant must be reduced from 1,200 to 600 types in compliance with the approved plan for reconstruction. (Sotsialisticheskiiy Trud, No 10, October 1960, page 16).

THE CHEMICAL INDUSTRY

New Artificial Leather

At the Dnepropetrovsk Machine Construction Plant, an automatic line has been built for the production of polyvinylchloride-impregnated fabric to replace leather. The new unit includes a 2,000 ton hydraulic press, in which the polyvinylchloride-impregnated fabric undergoes pressure at temperatures varying from 160-190 degrees centigrade in three stages. While still in the press the fabric is cooled off with water. The product is then automatically rolled up.

The entire unit will be operated by only three persons and will have an annual production of 250,000 square meters of polyvinylchloride-impregnated fabric. All mechanisms and the temperature regulator are automatically controlled. The control mechanism design and the entire concept of the unit were developed by the All-Union Scientific-Research Institute for Artificial Furs and

New Artificial Leather (cont'd)

Leathers. The unit is now being installed in one of the enterprises in Kiev. (Revista de Khimie, November 1960, No 10, page 605. Full translation).

HOIST-TRANSPORT

Loading Device Mechanization

During recent years the level of mechanization in loading and unloading operations in our national economy has risen considerably. About 140 types of hoist-transport and loading-unloading machines are being produced, the application of which has made it possible to mechanize many difficult and labor consuming processes and free a considerable number of workers.

Normal and special overhead cranes with a load capacity of up to 350 tons have been built, as well as gantry and tower cranes, electrical tackle-gear with a load capacity of up to 5 tons, various types of conveyors, automatic loading devices and other mechanisms.

A broad standardization of components and parts has been conducted, which has made it possible to organize mass production on many machines. The shift to production of new standardized machines has made it possible to organize the cooperative delivery of standardized parts and com-

Loading Device Mechanization (cont'd)

ponents for machines and to specialize several plants on the production of standardized components, as well as to introduce a perfected technology and production organization.

But we cannot be satisfied with the successes achieved in the production of hoist-transport machinery. Loading and unloading operations in this country still occupy 25% of the total work force, and many labor-consuming operations are carried out manually. The need for hoist-transport mechanisms grows from day to day, and our machine construction industry is not satisfying this need. This year less than half the number of mechanisms needed will be produced, and, for example, one-third of the needed trestle cranes.

The situation is even worse in respect to the variety in types of hoist-transport mechanisms. There is a very limited choice. In particular, we produce only 10 different models of automatic loaders.

Although many machines which have recently been produced are progressive in technology, they are still inferior

Loading Device Mechanization (cont'd)

to the best foreign models. Overhead cranes, for example, are heavy and wear out rapidly. Speed and distance control is limited, and in cabins of cranes used in the steel industry there is even no air-conditioning.

Customers are making serious demands for improved quality in hoist-transport mechanisms used in harbor and river transport. They lack modern control systems, a fact which causes the employment of a large number of operating personnel in port cities.

Justified censure on the part of the consumer is caused by the clumsiness, unwieldiness, and overuse of metal in the cranes, electrical tackle-gear and other hoist-transport mechanisms. Much of the blame should fall to the electrical industry, which produces much too heavy and cumbersome electric motors and starting motors.

The situation in respect to the production of hoist-transport technology for the mechanization of loading and unloading operations is causing serious alarm. By the end of the Seven-year Plan volume will almost double. But the planned increase in production of means of mechanizat-

Loading Device Mechanization (cont'd)

ion will not allow the use of manual labor to be decreased substantially. The proportion of manual labor will be about 69%. This of course will have a negative effect upon the organization of production and will slow down production growth.

Corrections must be made in the production plan for loading and unloading, hoist-transport machines in the current Seven-year Plan. It is necessary to increase machine production and expand variety as well as to improve quality.

This is a large and complex problem. In order to solve it successfully it is necessary to expand the system of specialized and well-equipped enterprises, to create experimental bases, and to conduct solid experimental operations. Some people think that if the number of specialized enterprises is decreased and the production of machinery is distributed among non-specialized plants, the production of machinery will increase. This is an incorrect and harmful viewpoint.

It is absolutely impermissible to have 250 enterprises in this country engaged in the production of hoist-trans-

Loading Device Mechanization (cont'd)

port machinery, while the proportionate weight of the production of this machinery in the total gross production of each plant is no more than 10%.

Unfortunately all this is happening right under the noses of the people in charge of the USSR Gosplan, although the decisions of the plena of the Central Committee of the CPSU obligate them to conduct work for the specialization of enterprises producing means of mechanizing production processes.

Along with the specialization of enterprises the necessity has developed to determine the main plants in producing all basic hoist-transport and loading-unloading machinery, and to create for these plants special design bureaus and scientific-research laboratories.

In view of this great tasks face the All-union Scientific-research Institute of Hoist-transport Machinery Construction. The very title tells us that this institute is of all-union significance. But it still is subordinate to the RSFSR State Planning Commission, a fact which naturally limits the potentials of the institute to influence the development of scientific and research work in the other

Loading Device Mechanization (cont'd)

republics.

It is time to make this institute the main one in the country for the research and design of means of mechanizing loading processes and transference to the control of the State Committee on Automation and Machine Construction. The institute also needs serious help in expanding its experimental base and in strengthening its cadres of skilled specialists.

It is an inadmissible situation when neither the USSR State Planning Commission nor the State Committee on Automation and Machine Construction has an organ which would be able to exercise control over such an important branch of machine construction as the production of hoist-transport and loading-unloading equipment. Such an organ is imperative! The absence of such an organ is leading to the phenomenon of local narrow-mindedness on the part of certain economic council leaders, and to a weakening of control over operations connected with the increase in production of this type of equipment.

The strengthening of the machinery construction base

Loading Device Mechanization (cont'd)

for the creation of means of mechanization of loading-unloading and auxiliary operations in the national economy is a task of great national importance. It demands daily constant attention on the part of the heads of enterprises and economic councils as well as of all party organizations. (Ekonomicheskaya gazeta, 29 September 1960. Full translation)

MISCELLANEOUS

Plastic Bearings

Professor S. Pinegin is in charge of research work being conducted in the Institute of machine studies of the Academy of Sciences of the USSR of the application of plastics in the manufacture of ball and roller bearings. (Vechernaya Moskva, 30 July 1960)

Diesel Engine

The youth of the Yaroslav Motor Plant have decided to create the best diesel engine in the country, and in the future -- the best in the world. They have appealed to all supplier plants to deliver materials for the new engine only of exceptional quality. The initiators of this project are the Komsomol members of the design bureau. They are presently developing the finishing of the new YaMZ-236 engine. (Komsomol'skaya Pravda, 9 August 1960. Full translation)

Procurement Difficulties

Our plant has been producing for many years 48,000 cubic meter per hour gas burners. The electric motors for these burners have always been supplied by the Khar'kov Electro-mechanical Plant. This type of electric motor, the A-72/6, was also ordered for 1960.

For some unknown reason the "Soyuzglavelektro" refused to send our order to this plant and suggested a motor of a different type, the MIZ-51/6, produced by the Plant imeni Karl Marks of the Lugansk Economic Council. Energetic protests had no effect. The changed order remained in effect. The plant promised to deliver the motors no sooner than the end of the third quarter. We were not happy with this delivery date, but we could do nothing about it. "Soyuzglavelektro" was implacable!

More than four months have passed, and the vice-chairman of the Lugansk Sovnarkhoz, Comrade Goncharenko, returned the orders for the construction of the special electric motors. It seems that they have not yet been tested sufficiently.

Procurement Difficulties (cont'd)

Cases are very frequent where "Soyuzelektro" is forced to correct its own mistakes. It is true that in order to do this it is necessary to carry on lengthy correspondence, trouble the heads of the State Planning Commission and the RSFSR, and to send our representatives to Moscow. In addition we lose a lot of time, and deliveries of machinery and equipment are delayed.

This happened to us with wire-drawing machines and pouring machinery for non-ferrous metallurgy. We used to receive the control equipment from the Ufa Low-voltage Equipment Plant. For 1960 "Soyuzglavelektro", with one stroke of the pen, transferred the order to the Cherkassk Plant in Stavropol' Kray. The production of this control equipment was set for the third quarter at this enterprise. By the time we were able to convince Soyuzglavelektro to speed things up, several months had passed and our plant had missed its deliveries. Maybe this type of mixup is typical only for Soyuzglavelektro? Unfortunately, no.

Thanks to the "Rosglavtyazhmashsnabsbyt" the plant iment V. V. Kuybyshev failed in its plan fulfillment for the first six months in delivery of thermal dampers for blast furnaces and classifiers for non-ferrous metallurgy. For several years the worm reduction gears for the

Procurement Difficulties (cont'd)

dampers were furnished to us by the Leningrad Reduktor Plant. This year the Rosglavtyazhmashsbyt gave the order to an 'Astrakhan' plant which was not equipped to produce this type of item. In May the order was transferred once more to the Reduktor Plant, but by then we had already missed our delivery date.

The departments of the State Planning Commission are trying to specialize the production of component parts and elements. There can be no objection to this. But in order to conduct such an adjustment it is necessary to consider the ability of enterprises to introduce the production of new items, as well as deadlines for delivery to the customer plants.

Many strange things take place in respect to this. Rosglavtyazhmashsnabsbyt gives our plant orders for the production of drags and scraper winches, while it selects the plants to deliver RM-1000 reduction gears with MK low-speed shaft tips.

Having learned that the orders for the reduction gears

Procurement difficulties (Cont'd)

are being transferred from the Leningrad Krasnyy Metallist Plant to the Izhevsk Plant imeni Lenin of the Udmurt Economic Council, we immediately protested this decision. Rosglavyazhmashsnabyt did not take our protest into consideration. Then we wrote and wired the vice-chairman of the RSFSR State Planning Commission, Comrade Syroy. The chairman of the Economic Council, Comrade Markelov, appealed to the chairman of the RSFSR State Planning Commission and others. But nevertheless the production of reduction gears remained at the Izhevsk plant. This plant formerly never produced such items and refused to supply them.

The chief of the reduction gear department of Rosglavyazhmashsnabsbyt, Comrade Sharenkov, ordered 10 of the 35 reduction gears which were to be produced by the Izhevsk plant -- for the drag components -- sent to the Pavshinsk Mechanical Plant. The remaining ones -- for the scraper winches -- were left to the Izhevsk plant, in spite of the protests of the latter.

But the Pavshinsk plant agreed to fill the order for reduction gears only under the condition that we send them the necessary forgings. This means that we would have to

Procurement Difficulties (cont'd)

send forgings from Irkutsk to Moscow. We would have been glad to do this if we had had the necessary forge-press equipment. But we do not, and the Pavshinsk plant appealed to Comrade Sharenkov to cancel the order.

Then we said to Rosglavyazhmashsnabsbyt: since you are ordering the winches and supplying the equipment, either give us the reduction gears or allow us not to produce winches.

This question continued to hang in the air. The managers of Rosglavyazhmashsnabsbyt are sawing off the limb upon which they are sitting, and the plant is getting the short end of the deal. It is paying large penalties and breaking the normal production rhythm.

Naturally the economic ties must be improved. They cannot be inflexible forever. Experience makes its corrections, and sometimes these are very substantial ones. But in order for delivery changes not to reflect on the fulfillment of tasks it is necessary to conduct planning which would exclude the harmful practice of arbitrary changes in

Procurement Difficulties (cont'd)

suppliers. (Ekonomicheskaya gazeta, 11 August 1960.
Partial translation).

ELECTRICAL POWER EQUIPMENT

For Further Technological Progress

The materials and resolution of the July Plenum of the Central Committee CPSU give us, party workers, much to think about. There are many vital problems in perfecting production, further technological progress, etc., in the decisions of the plenum. It also comes out that it is necessary to introduce the production of perfected machinery, equipment and instruments for the complex mechanization and automation of our industrial enterprises, and that it is necessary to develop a more active cooperation in our plants and factories, to specialize them and, finally, that it is necessary to constantly care for the training of properly educated engineer-technical personnel. I have selected these three problems because I want particularly to concentrate attention upon them.

1. What does it mean to furnish electrical equipment for the 2500 Mill? This means arming the men of the steel industry with a powerful, reliably operating aggregate which will cause a considerable increase in the

For Further Technological Progress (cont'd)

production of cold rolled steel. Our plant is producing this equipment right now.

The experience of foreign electro-technical firms has shown that the design renovation period for electrical equipment is about 10-12 years. At first we were a little bit taken aback by this. However, analyzing our potential, we decided that we can shorten this considerably.

Four years ago a plan was worked out at the plant whereby all of our production, including 750 different types, was to be modernized within 6 years. At the same time it was decided that our new models would not be inferior to the best foreign ones.

Naturally, without the support of supplier enterprises our plant would be hard put to solve this great problem. At the beginning of this year modernized machinery comprised about 50% of the total production. Thus, the modernizing of the second half of the production total will be done this year and next year. In two years we must do what we have done in four.

For Further Technological Progress (cont'd)

Naturally the potentials and conditions for creating modern equipment are now much greater than, let us assume, two years ago. But nevertheless it is necessary to admit that we have a great task ahead of us.

Here I should like to make some demands on the supply enterprises. From the chemical industry we should like to receive more new, progressive electro-technical materials, particularly lavsan film (50 microns thick). This film is particularly important for development of new production. The demands of the plant for organic silicate insulation are satisfied only to 50%.

We could also make great demands on the workers of the cable industry, who are supplying us poorly with glass insulated wire and, in particular, heat resistant enamel insulation.

We have the right to demand from the steel industry more high quality electro-technical steel and, in particular, cold rolled strips, which would allow us to make the punching of iron for stators and armatures automatic.

All this would allow us to make a more rapid increase

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in the technical level of electric motors and to introduce production of new models more rapidly.

2. Specialization and cooperation, which are mentioned in decision of the plenum, for some reason have not touched our enterprise. And neither the RSFSR State Planning Commission of the Moscow City Economic Council will deny that both of these questions have long been important ones for us. The plant is forced to produce a large assortment of simple items, not demanding skill or special equipment. We produce them although the same space could be used for producing electric motors and complex electro-technical equipment.

Such a use of the enterprises' productive space can hardly be called rational. On our own initiative we order some items from outside, and this shows once more that the plant could be freed from the production of many simple items and could increase the production of electric motors.

In our opinion the State Planning Commission of the

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RSFSR and the Moscow City Economic Council, engaged in planning, do not devote any attention to actual organizing work in specialization and cooperation.

The following fact is characteristic. Two years ago the Moscow City Economic Council gained supervision over the railroad car repair plant "Pamyat' Revolyutsii 1905 goda". This plant was made a branch of our enterprise for the organization of electric motor production. The men from Dinamo helped the plant create the conditions for introducing production on new models after only three months.

We wanted to place the shops in such a manner and solve individual technological processes in such a manner as to obtain maximum mechanization in automation at both plants, eliminating any duplication, and achieve highly organized production of electrical crane equipment. However, the Moscow City Economic Council did not support our aim.

The "Pamyat' Revoluttsii 1905 goda" is now developing

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on the basis of outmoded organization and technology, and is copying the Dinamo Plant of the 30's. There you can find dwarf mechanical, welding, plastics and other shops.

Is this the way the government would do it? Such a decision contradicts the resolution of the July Plenum of the Central Committee of the CPSU, where the necessity of concentrating attention on problems of technological progress was stressed, the solution of which will have the greatest economic effect.

3. In its decisions the July Plenum of Central Committee of the CPSU demands further expansion of the training of specialists with higher and technical education. The collective of our enterprise wants to contribute to this worthwhile project.

On the initiative of the party committee a branch of the All-Union Correspondence Polytechnic Institute is being created at our plant. In the coming academic year, on the premises of the school supported by the plant, right next to the plant courses in the first two departments

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of this institute will begin -- the electro-mechanics and mechanics departments.

Not long ago we evaluated the entrance examinations. About 200 workers from our and other plants took part in the session. 117 of them passed the examinations and were accepted into the institute.

We think that for the solution of the problem of training technical personnel with degrees much could be done by our large enterprises such as the Motor Vehicle Plant named Likhachev, Krasnyy Proletariy, and others. In cooperation with educational institutions they could speed up to a considerable degree the training of engineer-technical personnel for their branches of industry.

In my remarks I singled out only three questions, from the solution of which much of the activity of our enterprise depends. The answer to these questions is the answer to the resolution of the July Plenum of the Central Committee of the CPSU, and this resolution obligates us, Communists, to make one more critical evaluation of our

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work, to penetrate deeper into the essence of economy, and to determine more concretely both the tasks and the methods of completing them. (Moskovskaya Pravda, 13 August 1960. Full translation).
